

JAPANESE SAWFLIES OF THE FAMILY BLASTICOTOMIDAE
(HYMENOPTERA: SYMPHYTA)

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Abstract.—The family Blasticotomidae of Japan is revised, and one new species, *Blasticotoma warabii* sp. nov., is described and illustrated. A key to the Japanese genera and species and illustrations of their taxonomically important characters are given. Food plants of *Runaria flavipes* are newly described.

Key Words: Blasticotomidae, *Blasticotoma*, *Runaria*

Blasticotomidae is a small family of Tenthredinoidea associated with ferns and occurs only in the Palearctic Region. Smith (1978) listed 8 world species and subspecies in three genera and Shinohara (1983) added two species from Taiwan. In Japan, the family contains four species and one subspecies of two genera, namely, *Blasticotoma atra* Zhelochovtsev, 1934, *B. nipponica* Takeuchi, 1939, *B. filiceti pacifica* Malaise, 1931, *Runaria reducta* Malaise, 1931, and *R. flavipes* Takeuchi, 1939. Recently, I had an opportunity to examine three specimens which were captured on stems of bracken fern, *Pteridium aquilium* (L.), in Hokkaido, Japan. These specimens resemble *B. nipponica* and *B. filiceti pacifica*, but they differ from *B. nipponica* by the small tooth of the claw and by the slender sawsheath, and from *B. filiceti pacifica* by the maculation of the forewing. I, therefore, believe that these specimens are new to science. In this paper, I describe and illustrate this species.

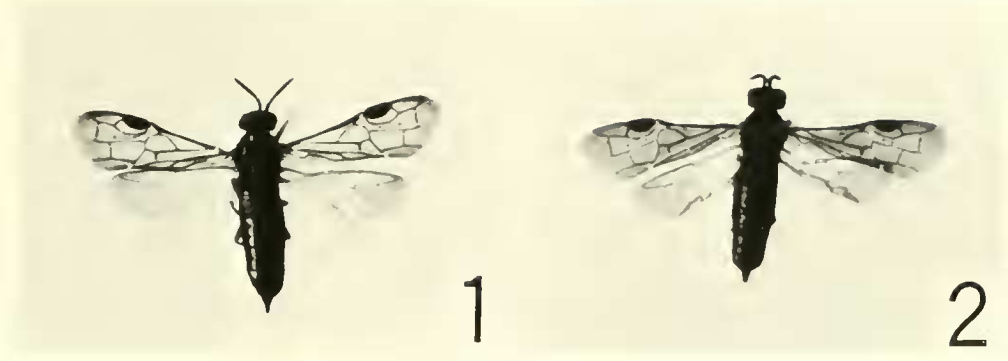
DIAGNOSIS OF BLASTICOTOMIDAE

First discoidal cell of forewing petiolate, stigma of forewing large and nearly semi-circular in shape, anal cell of forewing with

an oblique crossvein (Fig. 8). Antenna with four (Fig. 6) or three segments.

KEY TO THE JAPANESE GENERA
AND SPECIES

1. Antenna with three segments, tarsal claw without inner tooth (*Runaria*) 2
- Antenna with four segments, tarsal claw with inner tooth (Figs. 20–23) (*Blasticotoma*) 3
2. Legs black with anterior four knees, all tibiae and tarsi yellow *R. reducta* Malaise
- Legs yellow to reddish yellow, only coxae black *R. flavipes* Takeuchi
3. Female 4
- Male 7
4. Forewing entirely infuscate (Fig. 2) 5
- Forewing partially infuscate (Fig. 1) 6
5. Legs black with all knees, tibiae, and tarsi reddish yellow (Figs. 13 and 14); inner tibial spur of fore leg as in Figs. 18 and 19; sawsheath as in Fig. 27 *B. atra* Zhelochovtsev
- Legs reddish yellow with all coxae and trochanters black; inner tibial spur of fore leg as in Fig. 17; sawsheath as in Fig. 26 *B. filiceti pacifica* Malaise
6. Claws with a large inner tooth (Fig. 21); hind leg black with hind tibia yellow to reddish yellow except for apical portion; inner tibial spur of fore leg as in Fig. 16; sawsheath as in Fig. 25; apical portion of forewing clear; lance as in Fig. 32 *B. nipponica* Takeuchi
- Claws with a small inner tooth (Fig. 20); hind leg yellow to reddish yellow; inner tibial spur



Figs. 1–2. Dorsal view—1, *Blasticotoma warabii* sp. nov. 2, *Blasticotoma filiceti pacifica* Malaise. (3×)

- of fore leg as in Fig. 15; sawsheath rather slender (Fig. 24); apical portion of forewing infusate (Fig. 8); lance as in Fig. 31
- *B. warabii* sp. nov.
 - 7. Forewing uniformly infusate; genitalia as in Figs. 36 and 40; penis valve as in Fig. 44
 - *B. filiceti pacifica* Malaise
 - Forewing rather clear, sometimes partially infusate
 - 8
 - 8. Legs black with anterior four knees, all tibiae and tarsi reddish yellow (Figs. 11 and 12); genitalia as in Figs. 37 and 41; penis valve as in Fig. 45
 - *B. atra* Zhelochovtsev
 - Anterior four legs reddish yellow with all coxae and trochanters black
 - 9
 - 9. Hind femur and apical portion of hind tibia black; genitalia as in Figs. 35 and 39; penis valve as in Fig. 43
 - *B. nipponica* Takeuchi
 - Hind femur and apical portion of hind tibia reddish yellow; genitalia as in Figs. 34 and 38; penis valve as in Fig. 42
 - *B. warabu* sp. nov.

***Blasticotoma warabii* Togashi,
NEW SPECIES**

Figs. 1, 3–8, 15, 20, 24, 28, 31,
34, 38, 42

Female.—Length 9 mm. Body including antenna black, but cenchri pale white, apical half of mandible and apical portion of sawsheath reddish brown. Wings as in Fig. 8. Legs reddish yellow, with following parts black: all coxae and trochanters, and basal portion of all femora.

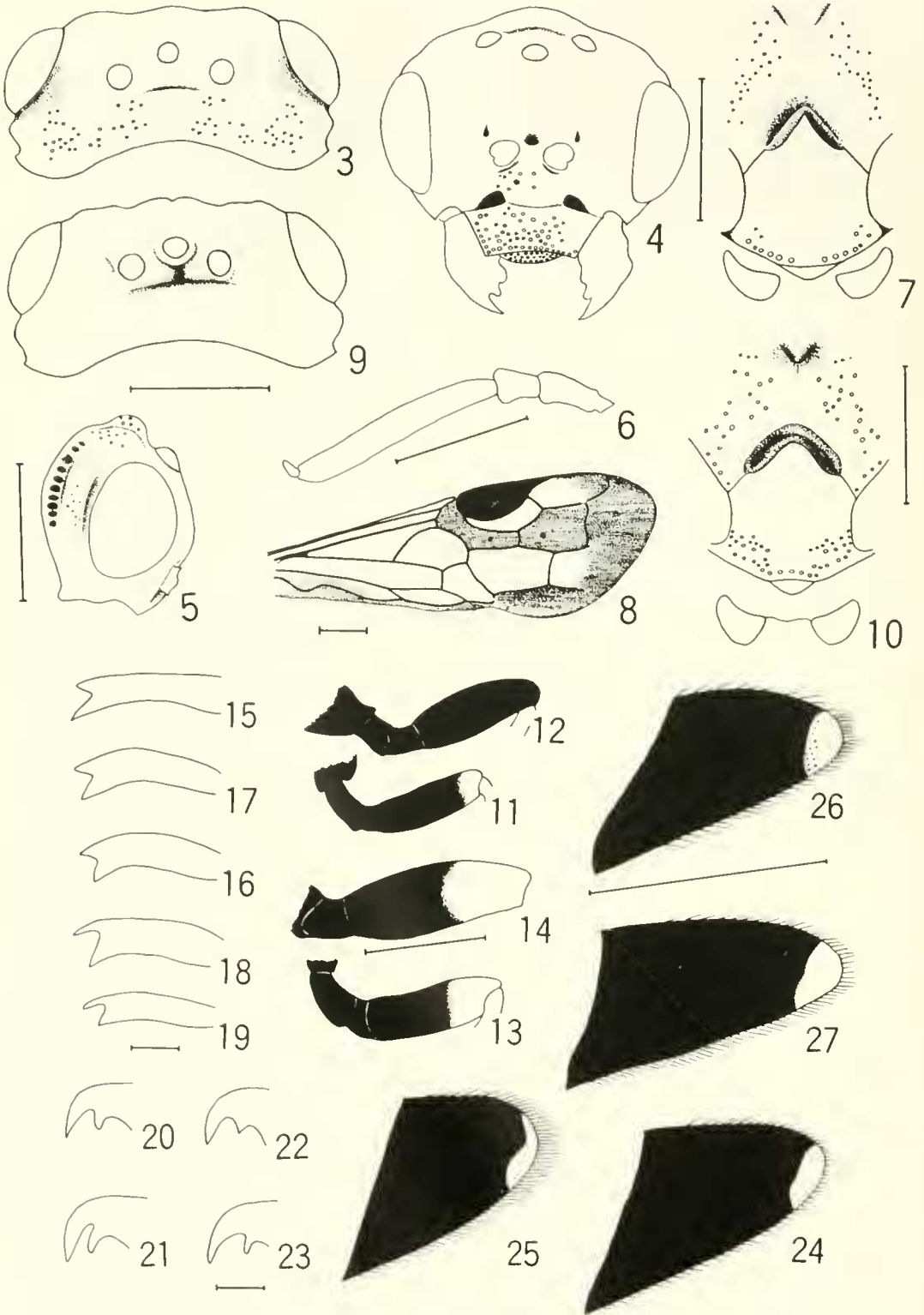
Head transverse, postocellar area distinctly raised; lateral and interocellar furrows nearly absent; postocellar furrow rath-

er distinct (Fig. 3); OOL:POL:OCL = 0.7:1.0:0.8; frontal area nearly flattened; post-orbital groove distinct and broad (Fig. 5); postgenal carina distinct; median fovea as in Fig. 5; lateral foveae comma-like; supra-clypeal area slightly convex; clypeus nearly flattened, frontal margin nearly truncate (Fig. 4); labrum small; malar space broad; mandibles tridentate (Fig. 4); antenna as in Fig. 6.

Thorax normal; mesoscutellum as in Fig. 7. Inner tibial spur of fore leg as in Fig. 15; claw with a small inner tooth (Fig. 20). Abdomen normal; sawsheath as in Fig. 24; ratio between length of sawsheath and basal plate at about 1.0:2.1; lancet with 13 serrulae (Fig. 28); lance with 8–9 serrulae (Fig. 31).

Sculpture.—Face rather shallowly, irregularly, and reticulately sculptured; occipital margin coarsely and distinctly punctured; clypeus rather evenly, shallowly, and distinctly punctured; labrum densely punctured; pronotum shagreened, with distinct and large punctures; posterior half of mesonotal lateral lobes coarsely and distinctly punctured (Fig. 7); mesoscutellum nearly impunctate, but posterior margin with distinct punctures (Fig. 7); mesopleuron distinctly and evenly punctured; mesosternum nearly impunctate, but with some distinct punctures. Abdominal tergites shagreened, but last tergite nearly impunctate, shining.

Male.—Length 7 mm. Coloration and structures except for male genitalia as in



female. Male genitalia as in Figs. 34 and 38; penis valve as in Fig. 42.

Habitat.—Japan (Hokkaido and Honshu).

Holotype: Female, 13. VI. 1986, Hitsu-jigaoka, Sapporo, Hokkaido (Type No. 2661, deposited in the Entomological Laboratory of Kyushu University).

Paratypes: Two females, same date for holotype; three males, 17. V. 1968, Sasari, Kyoto Pref., T. Naito leg.

Remarks.—This new species closely resembles *B. nipponica* but it differs from the latter species by the small inner tooth of the claw (in *nipponica*, the claw has a large inner tooth, as in Fig. 32); by the shape of the apex of the inner tibial spur of the fore leg (in *nipponica*, the apex of the inner tibial spur has both furcations subequal in size as in Fig. 16); and by the characters of the lancet, lance and penis valve.

Blasticotoma nipponica Takeuchi, 1939
Figs. 16, 21, 25, 29, 32, 35, 39, 43

Blasticotoma nipponica Takeuchi, 1939, p. 394.

Specimens examined.—Two males, 23. V. 1954, Mt. Tomuro, Kanazawa, Ishikawa Pref.; one female and one male, 10. V. 1969, Yoshioka, Kawachi-mura, foot of Mt. Hakusan, Ishikawa Pref.; one female, 12. V. 1978, Mt. Shiritaka, near Tsurugi-machi, Ishikawa Pref.; one male, 24. V. 1984, Tsurugi-machi, Ishikawa Pref.; one female, 31. V. 1987, Kinome Path, Imajo-cho, Fukui Pref.; one female, 5. VI. 1988, Mt. Rokumanbe, near Mt. Hakusan, Ishikawa Pref.

Supplementary notes.—Apex of inner tibial spur of fore leg bifurcate (Fig. 16); sawsheath rather short (Fig. 25); ratio between length of sawsheath and basal plate at about 1.0:2.1; lancet with 13 serrulae (Fig. 29); lance with 11 serrulae (Fig. 32); male genitalia as in Figs. 35 and 39; penis valve as in Fig. 43.

Blasticotoma filiceti pacifica
Malaise, 1931

Figs. 2, 9–10, 17, 22, 26, 30,
33, 36, 40, 44

Blasticotoma filiceti pacifica Malaise, 1931, p. 212.

Specimens examined.—(Hokkaido) One male, 10. VII. 1967, Aizankei, foot of Mt. Taisetsu, T. Naito leg.; two females, 23. VII. 1969, Mt. Rausu, Shiretoko Peninsula, T. Naito leg.; one female, 19. VII. 1987, Aizankei, foot of Mt. Taisetsu, T. Naito leg. (Honshu) One female, 17. VI. 1968, Sasari, Kyoto Pref., T. Naito leg.; two females, 29. VI. 1972, Mt. Shiritaka, near Tsurugi-machi, Ishikawa Pref.; one female, 7. V. 1972, Fukase, Okuchi-mura, foot of Mt. Hakusan, Ishikawa Pref.; one female, 9. V. 1984, Tsurugi-machi, Ishikawa Pref.

Supplementary notes.—Posttergite reddish brown to dark brown; apex of inner tibial spur of fore leg bifurcate (Fig. 17); sawsheath as in Fig. 26; ratio between length of sawsheath and basal plate at about 1.0:2.3; lancet with 12 serrulae (Fig. 30); lance with 8–9 serrulae (Fig. 33); male genitalia as in Figs. 36 and 40; penis valve as in Fig. 44.

Figs. 3–27. Figs. 3–8. *Blasticotoma warabii* sp. nov.—3, head, dorsal view; 4, do, frontal view; 5, do, profile; 6, antenna; 7, mesoscutellum and cenchri; 8, forewing. (Scale: 1 mm.) Figs. 9–10. *B. filiceti pacifica* Malaise—9, head, dorsal view; 10, mesoscutellum and cenchri. (Scale: 1 mm.) Figs. 11–14. Fore and hind legs, except for tibiae and tarsi, of *B. atra* Zhelochovtsev—11, fore leg of male; 12, hind leg of male; 13, fore leg of female; 14, hind leg of female. (Scale: 1 mm.) Figs. 15–19. Inner tibial spur of fore leg—15, *B. warabii*; 16, *B. nipponica*; 17, *B. filiceti pacifica*; 18 and 19, *B. atra*. (Scale: 0.1 mm.) Figs. 20–23. Hind tarsal claw—20, *B. warabii*; 21, *B. nipponica*; 22, *B. filiceti pacifica*; 23, *B. atra*. (Scale: 0.1 mm.) Figs. 24–27. Sawsheath, lateral view—24, *B. warabii*; 25, *B. nipponica*; 26, *B. filiceti pacifica*; 27, *B. atra*. (Scale: 1 mm.)

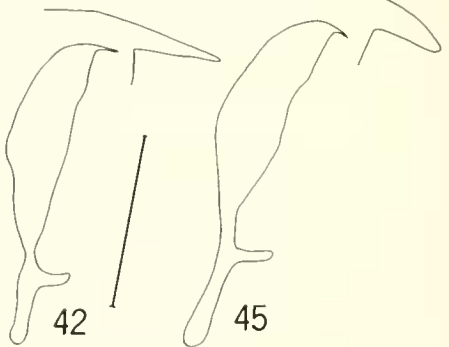
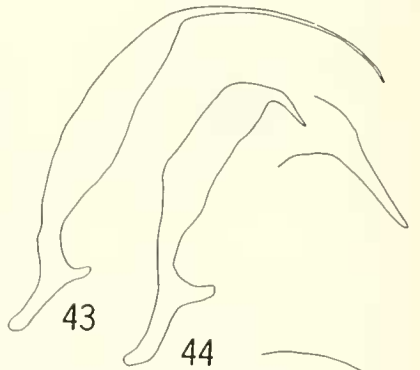
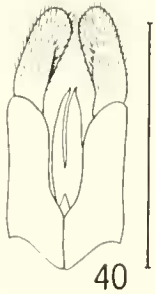
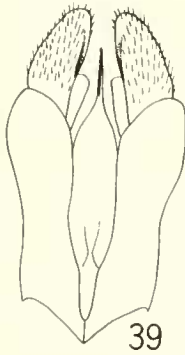
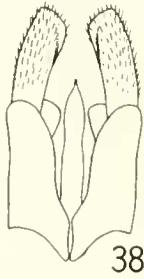
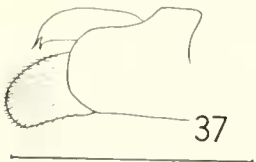
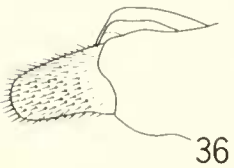
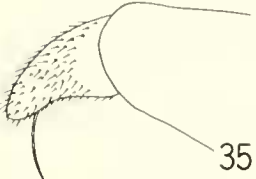
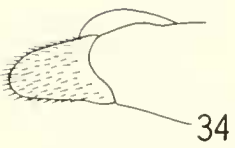
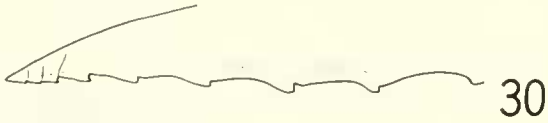
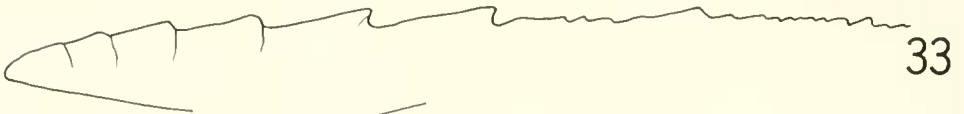




Fig. 46. Oviposition of *Runaria flavipes*, food plant: *Polystichum tripterum*. (1×)

Blasticotoma atra Zhelochovtsev, 1934
Figs. 11–14, 18–19, 23, 27, 37, 41, 45

Blasticotoma atra Zhelochovtsev, 1934, p. 154.

Specimens examined.—(Hokkaido) One female, 23. VII. 1969, Mt. Rausu, Shiretoko Peninsula, T. Naito leg.; one female, 19. VII. 1987, Aizankei, foot of Mt. Taisetsu, T. Naito leg. (Honshu) Two males, 4. VII. 1964, Karasawa, foot of Mt. Hodaka, Nagano Pref., T. Naito leg.; one male, 11. VI. 1968, Uchinikaya, Ina, Nagano Pref., T. Naito leg.

Supplementary notes.—Legs dark brown to black, but in female, all knees, tibiae and tarsi reddish yellow, and in male, anterior four knees, all tibiae and tarsi reddish yellow (Figs. 11–14); inner tibial spur of fore leg as in Figs. 18 and 19; male genitalia as

in Figs. 35 and 39; penis valve as in Fig. 45.

Remarks.—The structure of the lancet and lance of this species are similar to those of *B. filiceti pacifica*, but the shape of the inner tibial spur of the fore leg and male genitalia and penis valve show differences between these two species.

Runaria reducta Malaise, 1931

Runaria reducta Malaise, 1931, p. 213.

Specimens examined.—One female and one male, 10. V. 1969, Yoshioka, Kawachimura, foot of Mt. Hakusan, Ishikawa Pref.; one male, 25. V. 1972, Mt. Shibatake, Niigata Pref., K. Baba leg.; three females, Mt. Shiritaka, near Tsurugi-machi, Ishikawa Pref.; two males, 13. VI. 1986, Hitsujigao-ka, Sapporo, Hokkaido.

Figs. 28–45. Figs. 28–30. Lancet—28, *B. warabii*; 29, *B. nipponica*; 30, *B. filiceti pacifica*. Figs. 31–33. Lance—31, *B. warabii*; 32, *B. nipponica*; 33, *B. filiceti pacifica*. Figs. 34–37. Male genitalia, lateral view—34, *B. warabii*; 35, *B. nipponica*; 36, *B. filiceti pacifica*; 37, *B. atra*. (Scale: 1 mm.) Figs. 38–41. Male genitalia, dorsal view—38, *B. warabii*; 39, *B. nipponica*; 40, *B. filiceti pacifica*; 41, *B. atra*. (Scale: 1 mm.) Figs. 42–45. Penis valve—42, *B. warabii*; 43, *B. nipponica*; 44, *B. filiceti pacifica*; 45, *B. atra*. (Scale: 0.5 mm.)

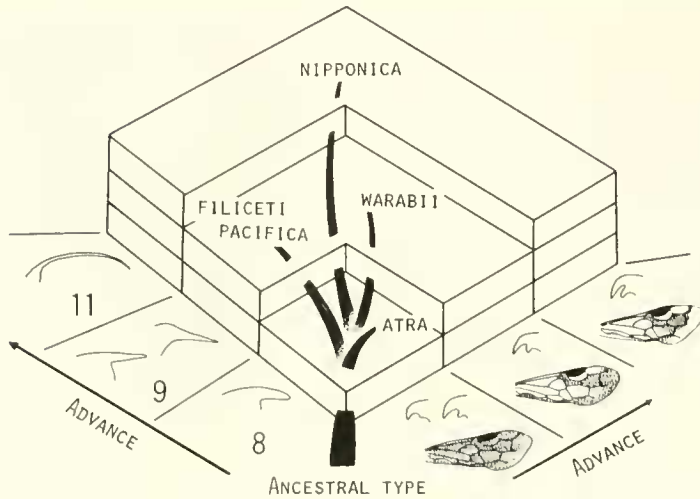


Fig. 47. Pictorial phylogeny of the genus *Blasticotoma* on the basis of the shapes of the external characters of the adult.

Runaria flavipes Takeuchi, 1939
Fig. 46

Runaria flavipes Takeuchi, 1939, p. 396.

Specimens examined.—Three females and six males, 20–24. V. 1984, Mt. Shiritaka, near Tsurugi-machi, Ishikawa Pref.; one female, 5. V. 1987, Mt. Shiritaka, near Tsurugi-machi, Ishikawa Pref.; one female, 5. V. 1988, Tsurugi-machi, Ishikawa Pref.

Supplementary note.—In 1987, I observed a female of this species ovipositing on the stem of *Polystichum tripterum* (Fig. 46); thus this must be the host plant.

Phylogenetic relationship of *Blasticotoma*
occurring in Japan

The comparative morphology of the male genitalia indicates that *Blasticotoma* can be clearly divided into two groups: *nipponica*-group and *filiceti*-group. Each group has a definite character of the penis valve as shown in Figs. 42–45. The penis valve of *filiceti*-group has a short projection at the end of the valviceps (Figs. 42, 44, and 45), but that of *nipponica*-group has an elongate projection (Fig. 43). The number of the serrula of

the lance in the female also shows the corresponding distinction. Also, the shape of the inner tooth of the tarsal claw is different from species to species (Figs 20–23). According to the shape of the inner tooth of the tarsal claw, *filiceti*-group is divided into two subgroups, *filiceti*-subgroup and *warabii*-subgroup (Fig. 47). I also observed the differentiatonal tendency of wing maculation (Fig. 47). The phylogenetic relationship of *Blasticotoma* is illustrated in Fig. 47, which is based on the above-mentioned external characters.

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